



SAFEORD: <u>SAF</u>ETY OF <u>E</u>XPLOSIVE <u>ORDNANCE DATABANK</u>

BY
FRANK J. HANZEL
ENGINEERING DEPARTMENT



STIC SELECTE MAY 2 2 1985

JULY 1983

Approved for public release; distribution unlimited.

IE FILE COPY

NAVAL SURFACE WEAPONS CENTER

Dahlgren, Virginia 22448 • Silver Spring, Maryland 20910

SECURITY CLASSIFICATION OF THIS PAGE (When Data Entered)

REPORT DOCUMENTATION PAGE	READ INSTRUCTIONS BEFORE COMPLETING FORM							
MP 83-183 2. GOVT ACCESSION NO.								
4. TITLE (and Subtitle)	5. TYPE OF REPORT & PERIOD COVERED							
SAFEORD: <u>SA</u> FETY OF <u>E</u> XPLOSIVE <u>OR</u> DNANCE	Final							
DATABANK	6. PERFORMING ORG. REPORT NUMBER							
7. AUTHOR(e)	8. CONTRACT OR GRANT NUMBER(#)							
Frank J. Hanzel								
9. PERFORMING ORGANIZATION NAME AND ADDRESS	10. PROGRAM ELEMENT, PROJECT, TASK AREA & WORK UNIT NUMBERS							
Naval Surface Weapons Center (E52) Dahlgren, VA 22448								
11. CONTROLLING OFFICE NAME AND ADDRESS	12. REPORT DATE July 1983							
	13. NUMBER OF PAGES							
14. MONITORING AGENCY NAME & ADDRESS(II different from Controlling Office)	15. SECURITY CLASS. (of this report)							
	UNCLASSIFIED							
	15a. DECLASSIFICATION/DOWNGRADING SCHEDULE							
16. DISTRIBUTION STATEMENT (of this Report)								
Approved for public release; distribution unlimited.								
17. DISTRIBUTION STATEMENT (of the abstract entered in Block 20, if different from Report)								
18. SUPPLEMENTARY NOTES								
19. KEY WORDS (Continue on reverse side if necessary and identify by block number,)							
Safety of Explosive Ordnance Databank (SAFEORD)								
20. ABSTRACT (Continue on reverse elde if necessary and identify by block number)								
Restructuring of the Safety of Explosive Ordnance Databank (SAFEORD) includes replacement and additions to the hardware and restructuring of the Computer Software Programs. Hardware changes include replacement of the microfiche camera, fiche printer and developer, and fiche reader-printer and the addition of the CYBER 170/720 computer and an on-line computer terminal that provides the capability to retrieve weapon systems environmental safety test data in matrix format. Restructuring of the software provides a capability to retrieve documents by data and/or author.								

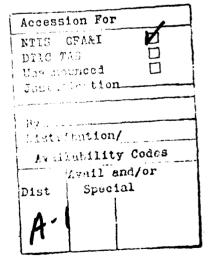
FOREWORD

The Safety of Explosive Ordnance Databank (SAFEORD) was conceived, designed, and developed by the Naval Surface Weapons Center (NSWC), System Safety Division (E50), Risk Assessment Branch (E52) under a task from the Naval Sea Systems Command (NAVSEA) Safety Division (SEA-06H). This document describes the restructuring of the SAFEORD system. NSWC/DL Technical Report TR-3192* gives a comprehensive description of the operation, contents, uses, and advantages of the system.

Released by

F. B. SANCHEZ, Head Systems Safety Division Engineering Department







Frank J. Hanzel, SAFEORD: Safety of Explosive Ordnance Databank, NSWC/DL TR-3192 (Dahlgren, Va., September 1974).

CONTENTS

	Page
INTRODUCTION	1
DATABANK STORAGE AND RETRIEVAL EQUIPMENT	1
RESTRUCTURING	_
EQUIPMENT	
SOFTWARE	2
SAFEORD STATUS	7
DISTRIBUTION	(1)

INTRODUCTION

The need for a centrally located databank to store and rapidly retrieve safety information pertaining to naval explosive ordnance, explosive materials, and weapon systems and components in the Fleet and under development is emphasized daily by urgent requests for this type of data. Instant availability of the necessary data can save lives, time, and money and prevent loss of fleet capability. The ability to obtain these data rapidly, accurately, and economically enhances tremendously the operational effectiveness of the fleet Navy Systems Commands.

Working under a NAVSEA Safety Division (SEA-06H) SEATASK, the System Safety Division (E50) developed a functional databank in 1969 capable of storing and providing rapid retrieval of naval explosive ordnance safety data. However, vastly increased demands for faster retrieval, greater simplicity of use, and faster rate of endowment resulted in a critical need for restructuring SAFEORD.

DATABANK STORAGE AND RETRIEVAL EQUIPMENT

A review of available computer and microfiche equipment was conducted to determine their ability to meet the design requirements for restructuring SAFEORD. The NSWC CDC 6700 and CYBER 170/720 computers were selected for use with the databank because of their availability, economical operation, and capability to interface efficiently with ordnance safety data and microfiche equipment. After evaluating the capabilities of available commercial microfiche equipment, the 3M model 500 microfiche reader-printer was selected for use with the databank. Additional equipment used with the databank includes a Xerox model 400 telecopier, a dry process microfiche camera/processor, a dry process duplifiche printer-developer, and a Silent 700 electronic data terminal.

RESTRUCTURING

EQUIPMENT

The original equipment provided SAFEORD users with a viable system for entering, storing, and retrieving weapon systems safety information. To meet demands for more rapid entry and retrieval of these data, a restructuring program was initiated. A dry process camera, fiche duplicator, and microfiche reader-printer units replaced the cumbersome wet process equipment. The new equipment: (1) significantly enhances entry and retrieval of data by reducing document photo-copying and fiche reproduction time, (2) reduces turnaround time required to reproduce documents from microfiche to hard-copy format, (3) is more cost-effective, and (4) eliminates hazards associated with the storing, handling (mixing), and disposing of chemicals required by the wet process photography operation. The addition of a CYBER 170/720 computer and a Silent 700 electronic data terminal significantly enhances SAFEORD data entry and retrieval capabilities by enabling its users to communicate directly with the computer.

SOFTWARE

The original SAFEORD computer software programs were designed to identify the number and location of each microfiche card containing specific safety information related to a unique weapon system, component, subcomponent, explosive, propellant, safety test, etc. The numbers of microfiche cards containing these data are published in the SAFEORD Weapon System Dictionary and/or Ship and Shore Dictionary. Users had to proofread (hand-massage) each microfiche card to identity the specific document(s) containing the desired information. This modus operendi, though effective, had to be improved to enhance rapid retrieval. Thus the software was restructured to provide the users with the following capabilities:

- 1. Documents can be located via the Log File Dictionaries. For example, Log File Dictionary No. 5 contains a chronological listing of all documents by date (Figure 1), while Log File Dictionary No. 6 contains an alphanumeric listing of all documents by file (author of source) (Figure 2). Headline entries in these dictionaries include the
 - a. Seven alphanumeric microfiche number in the left margin, which identifies the microfiche containing the document;
 - b. Document data
 - c. File (author-source)
 - d. Subject of the document under NARRATIVE.

FILE
50
SAFEORD

NARRATIVE	AEROJET SOLID PROPELLANT FORMULATION IDENTITY, ANP-2542 EP USE OF HEARING AIDS IN AREAS OF EXPLOS PRODUCTION & HANDLING, COMMENT NOW METALLIC FUZE SEAT LINER STUDY OF HAZARD CLASSIFICATION FOR 14-AS-1000 ATO RATE OF REACTION OF GASEOUS FLOURINE WITH WATER VAPOR AT 35C RATE OF REACTION OF GASEOUS FLOURING WITH WATER VAPOR AT 35C	FACILITIES FOR HANDLING EXPLOSIVES AND AMMUNITION RF ELECTROMACHETIC RADIATION SURVEY AT ATOMIC UNDERWATER WARFARE	BLOG MAS BRINBWICK MAINE SUBFACE TO AIR MISSILE STY TEST COMPARTMENT SPRINKLER SYS FOR AUTHORITY TO REMOVE DELUGE AND SPRINKLER SYSTEMS FROM H E CAST	LUADINA PLANIS REDGESI FUK DISCUSSION AND AGREEMENTS AT TARTAR NEWS MEETING RKT SPLINTER CAMPETERINE AT BINDS CROT AS ACRA	CUNTERFORM AD TO THE AT 1956 ARCON MOTOR VIERATION TESTS	AIRCRAFT PROTECTION FROM ATMOSPHERIC ELECTRICAL HAZARDS DEVELORMENT OF DEDDELLANT CHARGE FOR THE KC.9 HEM LOW CATABLET	HAZARO DE ELECTROMACHETER RADIATION TO ORDNANCE	FINAL RPT GROUND AND HIGH SPEED FLIGHT TST OF BOMB, CHEMICAL, 500LB	LOW DRAG MOS4/000 Tartar agg rkt mtr expl haz classification request clarification DF	TERRIER READY SERVICE MAGAZINES SPRINKLING SYS DETECTION DEVICES COMMENTS ON	AEROJET SOLID PROPELLANT FORMULATION IDENTITY, ANP-2696 HH	INVESTIGATION OF HERD HAZ TO POGO-HI MISSILE ON USS HAZELWOOD DD531	AEROJET SOLIO PROPELLANT FORMULATION IDENTITY, ANY-2699 HH	FILD FAUDUCIDE FOR UP CONTINUES SAURCED TON STANDARY OF STANDARY III CONTINUES STANDARY TO SEEL OF SEEL SEEL SEEL SEEL SEEL SEEL SEEL SEE	HAZARD CLASSIFICATION 1ST OF 5/38 INCH PROJECTILES MO49/000	HAZARD CLASSIFICATION 1ST OF 3/50INCH CARTRIDGES M033/001	CENETITIVITY OF EVEN TO CETEBON DEFECTION	HAZ CLAKK TYT 5/38 PROJECTILE MOAS/CON	HAZ CLASS TST 3/50 CARTRIDGES MO33/001	BONDA	METRIOL TRINITRATE ICC HAZ ARD CLASSIFICATION	MKTO TERRIER READY SERVICE HANDLING STS DELETION OF AUTOMATIC COZ	MILITARY SPECIFICATION ROX COMPOSITION CH-6	MINES MO27/002-003, HBX-3 LDADING OF EXPLOSIVE SECTIONS	AEROJET SOLID PROPELLANT FORMULATION IDENTITY, ANP-2729 HH	CC(N)9 REQUEST FOR CHANGE TO SPECIFICATION	COALNOS REQUEST FOR CHANGE TO SPECIFICATION	ULGS CIRSS REQUEST FOR CHANGE FOR STELLTING TABLES TABLES RECORDER FOR THE STELLTING STOWN RECORDER FOR THE STOWN	HEAT RESISTANT EXPLOSIVE III 1,3-DIAMINO-2,4,6-TRINITROBENZENE, DATB,	FROM 1,3-DIMETHUX/BENZENE OPERATIONAL NECESSITY WAIVER FOR OPERATION OF ANNO WHARF HOTEL	REQUEST FOR
FILE	AERDJET BUORD/NAR BUORD/REZC/GFS AERDJET AKEDJET AKESB	IEE1 8024	BUSHIPS NAVNINDEP YORKTOWN/326/RHF	NA VDRD/O48	NWL T-31/58 DEFCHAGENCY	AD-210042	BUORD CMC	NADTS CHINCOTEAGUE	NAVORD/048	BUSHIPS	AEROJET	NPG 1631	AEROJET	PICATIONY 2500			PICATIMNY 2572	MD 136/58	NPG 137/58	BUEXP	BUORD/MAE - C - AF	BUSHIPS	MIL-R-21723(NORD)	NU0S/0E285/FWC	AEROJET	BUSHIPS	BUSHIPS	SON	NOL 6208	COMNAVEOR MARIANAS/92	
DOCUMENT DATE	15AUGS8 19AUGS8 21AUGS8 25AUGS8 00SEPS8	OOSEPS8	155EP58 245EP58	26SEP58	000CT58	# 10000	020CT58	200CT58	280CT58	OSMOVSB	06NDV58	14NOV58	17NOV58	COUPCE	000EC58	0006058	0006058	0005038	000EC58	010EC58	010EC58	0205058	04DEC58	04DEC58	09DEC58	110EC58		1506058		16DEC58	
FICHE	ZU7534K SUB155J BO1614J ZU7282F BU2191J DU6123F	SC6861E	BU6805K \$C6921K	2C7055H	AU4542A	47.06.72	SC6953E	BC3611K	2070556	BU6803L	207541J	MC0062L	ZU7541K	BC 73131	8C7765F	8C7924H	0014410	7C.1864K	ZC 1865F	2U7024A	ZU7345E	BU6804A	DU7454I	ZU3573G	ZU7542B	BU68048	BU68040	BC68540	ZC23410	SU8632G	

FIGURE 1. SAMPLE FROM LOG FILE DICTIONARY NO. 5: DOCUMENTS BY DATE

=
-
-
Q
0
_
Ω
~
œ
ĕ
EOR
FEOR
EOR
IF EOR
AFEOR

MARRATIVE	RENEWAL OF WALVERS REQUEST FOR EXEMPTION MUNITIONS STORAGE AREA REQUEST FOR EXEMPTION WALVER OF SECURITY HINGE BRACKETS FOR MAGAZINE ACCESS DOORS REQUEST WALVER REQUEST AND PROPOSED STORAGE PLAN FOR THE CAMP HENDKO MARINE	MANITIONS STORAGE REQUEST FUR WAIVER PHYSICAL SECURITY WAIVER REQUEST FOR DEMOLITION AREA REQUEST FOR DEMOLITION AREA REQUEST FOR DEMOLITION FOR A MENTING DEMONSTRAINE STATEMENT AND THE CORDER ACTIVITIES	TECHNICAL MAMIAL WHICH PROVIDES DESCRIPTIONS AND OPERATING AND MAINTENANCE INSTRUCTIONS FOR THE WES LINE CHARGE TRAILER-MOUNTED SYS ESTABLISHMENT OF ANTENNA SITES APPROVAL OF CONTROL OF LIQUID HYDROGEN HAZARDS AT EXPERIMENTAL FACILITIES	60 CO USED IN NARROW BEAM CONDITION, ENERGY AND BEAM CONFIGURATION CORRECTION FACTORS CORRECTION FACTORS DOESB VISIT EXPLOSIVE SAFETY SURVEY OF HEADQUARTERS SUPPORT ACTIVITY TAIPE! CHANGE PROPOSAL TAILOS MOTIVINGUES TAILOE BOOGSTED MOTIVOSAL TAILOS MOTIVINGUESE	TALOS BUOSTER MOTI/OUS EXTINGUISHEN TALOS BOOSTER APPLIEDE ENGINEERING SUPPORT MONTHLY RPT CONTRACT N-00017-69-C-4318 TALOS BOOSTER ENGINEERING SUPPORT FINAL RPT STATIC FIRING RECORDS AND DATA SHEETS (SIX X239 B2)	SPARROW III AIM-TF PRE-FLIGHT RATING STIPERT) RPT VOL I SPARROW III AIM-TF QUALIFICATION 15T VOL I TEST RPT FOR OUT OF LINE INITIATOR WAS SIDEWINDER RKT WIR S+A IGAIITOM ASSEMBLY FOR AIM-9-DESIDEWINDER WK 36 RKT WIR TEST RPT ENCLOSED BROCHARE DESCRIBES TATB FACILITY HERCULES-WICKEGOR CAPABILITIES FOR PRODUCING TATB HERCULES-WICKEGOR CAPABILITIES FOR PRODUCING TATB HERCULES-WICKEGOR CAPABILITIES FOR PRODUCING TATB HAZ TSTING OF WATER-WET HAN IN FROZEN COMDITION PROJ 688	NITROCELLUIGE CHANGE PROPSAL FOR ELIMINATION OF DRYING CELLULOSE VALUE ENGINEERING CHANGE PROPSAL FOR ELIMINATION OF DRYING CELLULOSE COTTON PRIOR TO THE NITRATION PROCESS THE NITRATION PROCESS SUPPLIENTED DATA FOR REQUEST FOR DEVIATION/WAIVER OR ENGINEERING	SIX-MONTH SHELF LIFE TSTS ON THIRD PRODUCTION RUN MO13/000 GAS GEN FINAL REPORT POLARIS AS SECOND STAGE MOTOR PROPELLANT SAFETY DATA WAIVER NO 3 0-0 SEPARATION OF MAGAZINES 173 AND 169 WAIVER RENEWAL & CANCELLAITON EXPLOSIVE SKREWAL & CANCELLAITON EXPLOSIVE SKRETY SURVEY 23-26 JUN 70 WAIVERS/EXEMPTIONS OF SAFETY REGULATIONS FOR AMMO, EXPLOS + RELATED DANGEROUS MATERIAL EXEMPTION ECOLES INC 8Y JF GREEN, MOSSOP SAFETY DIRCTR EXPLOSARETY SURVEY, HERCULES INC, BY JF GREEN, MOSSOP SAFETY DIRCTR
FILE	HDOTRUSMC WASHINGTON/ING/RGH HDOTRUSMC WASHINGTON/ING/RM/ADB HDOTRUSMC WASHINGTON/ING/RM HDQTRUSMC WASHINGTON/ING/RM	HOOTRUSMC WASHINGTON/LMG/RM HOOTRUSMC WASHINGTON/LMG/RN HOOTRUSMC WASHINGTON/LMW/50 HOOTRUSMC WASHINGTON/LMW/50 HOOTRUSMC WASHINGTON/LMW/50	HDOTRUSMC WASHINGTON HDOTRUSMC WASHINGTON HDOTRUSMC WASHINGTON/LFF-1-TMR HEALTH AND SAFETY LAB	MEALTH PHYSICS ASSOC LTD MEDSUPPACT TAIPEI/35/CDC MEDSUPPACT TAIPEI/35/SUB MEDSUPPACT TAIPEI/35/SUB MEDSUPPACT TAIPEI/35/SUB		RCULES RCULES RCULES RCULES RCULES RCULES	HERCULES INC HERCULES INC HERCULES INC	HERCULES INC HERCULES INC HERCULES INC HERCULES INC HERCULES INC HERCULES INC HERCULES INC HERCULES INC HERCULES INC
DOCUMENT DATE	03FEB76 06AUGB1 31MARB0 01APR61	270CT81 100CT80 03NDV80 01JUN81		125EP74 09JAN75 24JAN78 06NOV68	275EP68 005EP69 01N0V7 i 160CT59	00APR68 005EP68 27MAR78 12APR79 3 1MAR80 00FE880 14APR78	16NDV8 1 20AUG79 07AUG79 00AUG77	30JUN66 29JUN74 21DEC70 29JUN72 02NDV70 150CT70 01JUN72 15APR70 28JUL69
FICHE	TU64 12B TU666 1A TU5 124C TU6474K	TU6885G TU5691D TU5761C TU64738	TUS532A BU25511	204575C SU8461A TU25331 AU1714F	AU1723F AU1945A BC4795H	8C6754J 8C6783G 8U2932K 8U2935J 8OC4238 8OC4238 8OC4338 8OC4358	800961F 800961H 800961J 800961Z	DU2465G SC7063B SU1351D SU1301F SU1334G SU1952K SU6572L SU6573L

FIGURE 2. SAMPLE FROM LOG FILE DICTIONARY NO. 6: DOCUMENTS BY FILE (AUTHOR OR SOURCE

A schematic of the retrieval modus operendi by document date and/or author-source is shown in Figure 3.

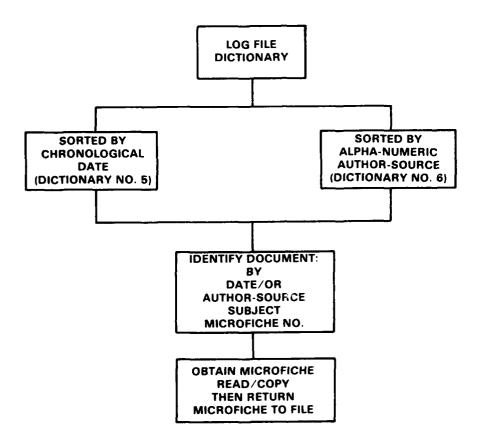


FIGURE 3. SCHEMATIC OF THE MODUS OPERENDI FOR DOCUMENT RETRIEVAL VIA LOG FILE DICTIONARY

- 2. The Log File Dictionaries can be customized. The following customized Dictionaries exist: NAVSEA-06H Selected Files, HARPOON, HERO, Laser, Marine Corps Weapons, TOMAHAWK, and VLS.
- 3. Weapon systems safety test data can be instantaneously retrieved in a matrix format. (This software modification required the addition of the CYBER 170/720 computer and the Silent 700 electronic terminal.) An example of this matrix output is shown in Figure 4. The headline entries for this format are self-explanatory.

PSTSTS NC WEAPON STSTEM	COMPONENT	SAFEGA COMPONENT ID	SAFEGRO DATA BASE COMPONENT ID CONTENTS	TEST TYPE	TEST RESULTS	REHARKS	YR FICHUM
000301 A 304B	QH.	4KB2/2,3		COOKFAST	12:62 EXP •	AVCD	72 AU8344J
000305 A 3048	Q 1 3	HKB 2/		COOKFAST	4:07 DET .	CECO ITUNESC	70 AUB351A
000306 A 3 DM8	QHH	HK82/		COOKFAST	5:12 DEF .	CECO ITUMESC	70 AUB351A
000307 A 8048	QH)	4K82/		COOKFAST	11:37 15:11*	A VCO PF12E UN	70 AU8352D
000308 A 3048	QH.	MKB 2/2		COOKFAST	3:35 BURN		73 AUB352H
000309 A 3048	F2	/506H		COOKFAST	22:48 DET .		71 AU8362 J
000310 A 30MB	F2	/\$06H		CODKFAST	PASS		70 AUB362A
ODDS12 A SUMB SNAKEYE	F2	/066W		COOKFAST	22:48 DET		71 AU8362A
000313 A 3048	PRIMER	HK45/1		V18	PASS		73 AUB362A
000314 A 304B	PRIMER	HK45/1		JOLT	PASS		73 AU8362A
000315 A 304B	0H#	4K82/	46	COOKFAST	5:55 DEF	CECO INTUMESC	73 AU8362D
000316 A 304B	QER	HK82/	g I	COOKFAST	7:19 DEF	PFIZER	73 AJ8362E
000317 A 3048	QH #	4KB2/		COOKFAST	9:12 DEF	AVCD	73 AU8362E
000318 A 30MB	QH.M	4KB 2/	5 1	COOKFAST	4:58 DEF	HOT WELT	73 AU8362F
000319 A 6UMB	QH 3	MK82/	TR I TOWAL	COOKFAST	2:01 EXP	PLASTISOL	73 AU8362F
000320 A 3048	017	HK82/	НŞ	CODKFAST	2:12 EXP	A/C NING	70 AU 8362G
000321 A 3 DMB	0+1	HK81/	£	COOKFAST	2:05 EXP		73 AUB362G
000322 A BUMB	QH A	4KB2/	91	COOKFAST	2:00 EXP		AU8362G
000324 A 3ULLPUP	Q F H	MK19/0	H8	CODKFAST	1:55 DET		73 AUB362H
000325 A 3ULLPUP	QH M	MK19/0	46	COOKFAST	1:09 1:53		73 AUB362H
000326 A 30MB	F2	/0661	1	COOKFAST	19:30 23:12		73 AU8362J
000328 A 8048	QH 3	4KB2/		COOKFAST	14:12 DEF	AVCO	12 AUB362J
000329 A 304B	QHP	0661		COOKFAST	17:14	PFIZER	AU8362 J
000330 A 304B	£1	4K82/		COOKFAST	31:55 24:11	CONICAL FIN	70 AU8362J
000331 A 30MB	GHM	4KB 2/		COOKFAST	17:02 DEF	PF12ER	AU8362K
000332 A 3048	GH 3			COOKFAST	12:45 DEF	AVCO	AU8362 K
000333 A 3ULLPUP	011	4K19/0	\$	COOKFAST	2:43 EXP		AU83621:
000335 A 30MB	MHD	97118		COOKFAST	0:48 1:37 DEF	PARTIAL DET	AU83621
ᲘᲡᲘ 338 A 3048	FI	4K30/5		JOL 7	PASS		AU8365G

FIGURE 4. WEAPON SYSTEM SAFETY TEST DATA MATRIX

SAFEORD STATUS

In approximately 14 years of operation, SAFEORD has been endowed with over 700,000 es of safety data on over 12,000 film cards related to (approximately) 8000 systems. These a represent over 90,000 documents of 1-225 pages in length. Over 16,000 descriptions and data codes are being used to enter data into SAFEORD.

The restructuring of SAFEORD to handle this volume has resulted in the following benefits:

- 1. The replacement of the wet process equipment with a dry photography system has resulted in a more rapid and cost-effective operation and the elimination of the health hazards associated with the chemicals required for the wet process.
- 2. Instantaneous retrieval of weapon systems safety test information is now possible by direct communication with the CYBER 170/720 computer via the Silent 700 electronic data terminal.
- 3. Immediate retrieval of safety documents by chronological data and/or document author-source is realized and customized SAFEORD Log File Dictionaries have been generated and published.
- 4. The capability now exists for users to instantaneously retrieve weapon systems safety test data in a matrix format.

The demand by SAFEORD users for faster safety data retrieval, greater simplicity of use, d more rapid data entry has been accomplished by the restructuring reported in this documnt.

DISTRIBUTION

		Copies		Copies
Command	er		Local:	
Naval Sea	Systems Command			
ATTN:	Code SEA-06H	(1)	D	(1)
	SEA-035B	(1)	E411 (Hall)	(1)
	SEA-0492	(1)	E431	(10)
	SEA-954	(1)	Е	(1)
	PMS-392	(1)	E50	(1)
Washingto	n, DC 20362		E52	(50)
Command	er			
Naval Mat	terial Command			
ATTN:	Code MAT OOF	(1)		
Washingto	n, DC 20360			
Command	er			
Naval Air	Systems Command			
ATTN:	Code 09E	(1)		
Washin >	.r. DC 20361			
Defense P	rinting Sc. ice			
Washingto	n Navy Yard	(1)		
Washingto	n. DC 20374			
Library o	f Congress			
ATTN:	Gift &			
Exch	ange Division	(4)		
Washingto	n, DC 20540			

END

FILMED

6-85

DTIC